



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,178	03/24/2005	Brian Cottrell	3009-1015	2058
<small>465</small> YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314			<small>7590</small> EXAMINER CHERRY, STEPHEN J	
			<small>04/21/2008</small> ART UNIT 2863	PAPER NUMBER
			MAIL DATE 04/21/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/529,178

Applicant(s)

COTTRELL, BRIAN

Examiner

Stephen J. Cherry

Art Unit

2863

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 21-28, 30 and 31 is/are pending in the application.
- 4a) Of the above claim(s) 30 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12-17-2008
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

New claims 30 and 31 are directed to an invention that is independent or distinct from the invention originally claimed, and examined on the merits in a first office action.

The originally filed invention described in claims 1-19, and 21-28 and the invention currently described in new claims 30 and 31 are related as follows:

- I. Method and apparatus method for monitoring monitoring of diagnosing a compustion process, including recieving sounds from fluid flow events and operational events.
- II. Method for monitoring sounds form a generic appliance that converts energy including specific means to store data of a plurality of operating sequences or comparing time intervals.

Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the methods are not directed specifically to combustion processes. The subcombination has separate utility such as monitoring of combustion processes.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention.**

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election

shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 30-31, as added 12-17-2008, are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-11, 13-16, 19, 21-24, and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,120,214 to West et al.

Regarding claim 1, West discloses a method of monitoring an energy conversion appliance of a kind which involves a combustion process and which, in normal use, performs two or more operational events in a pre-determined sequence, each said event having a different acoustic signature ('214, fig. 1, and col. 5, line 56), said method comprising providing a sound receiving transducer and positioning said transducer to receive sound signals emitted by the appliance during two or more operational events, one of said operational events comprising a fluid flow event which is related to the process of combustion and a second of said operational events comprising operation of a mechanical or electro-mechanical device ('214, fig. 1, ref 101, position near flame and would receive other sounds of burner), providing output means associated with said sound receiving transducer, said output means being responsive to the sound emitted by the appliance ('214, fig. 1, ref. 103), and employing a monitoring means to compare said received sound signals with pre-established data ('214, col. 9, line 61).

Regarding claim 4, and in view of the rejection of claim 1 above, West discloses a method according to claim 1, wherein the monitoring means is operable to determine whether an acoustic signature indicative of an operational event is concomitant with

normal performance of that operational event ('214, col. 9, line 61, expressed in output firing rate).

Regarding claim 5, and in view of the rejection of claim 1 above, West discloses a method according to claim 1, wherein the output means is responsive to occurrences of the sound emitted by the appliance, or by a single operational event, departing from said sound profile concomitant with proper functioning of the appliance or said operational event ('214, col. 9, line 61, expressed in output firing rate).

Regarding claim 6, and in view of the rejection of claim 5 above, West discloses a method according to claim 5, wherein the output means is responsive only if the emitted sound lies beyond a pre-established threshold level ('214, col. 9, line 20, expressed in output firing rate).

Regarding claim 7, and in view of the rejection of claim 1 above, West discloses a method according to claim 1, wherein the appliance comprises a protective enclosure which protects the appliance from the surrounding environment and within which enclosure said two or more operational events occur, said method comprising providing said sound receiving transducer within said enclosure ('214, fig. 1, ref. 5).

Regarding claim 8, and in view of the rejection of claim 1 above, West discloses a method according to claim 1 and comprising employing the output means to transmit signals related to the acoustic signatures of events within the operating sequence of the appliance to remote data processing means ('214, fig. 1, ref. 103 transmits to ref. 107, 109, and 43)).

Regarding claim 9, and in view of the rejection of claim 8 above, West discloses a method according to claim 8, wherein said transmission of signals from the output means occurs daily on a regular basis ('214, col. 9, line 64).

Regarding claim 10, and in view of the rejection of claim 1 above, West discloses a method according to claim 1, wherein said operational event which comprises operation of a mechanical or electromechanical device comprises at least one of operation of a pump, operation of a relay, and flow of liquid or gas through a pipe ('214, col. 10, line 1).

Regarding claim 11, and in view of the rejection of claim 1 above, West discloses a method according to claim 1, wherein said fluid flow event which is related to the process of combustion comprises the flow of gas or liquid fuel to or through a combustion zone or flow of combustion products from the combustion zone ('214, col. 10, line 1, and fig. 1).

Regarding claim 13, and in view of the rejection of claim 1 above, West discloses a method according to claim 1, wherein the output means either substantially directly, or substantially indirectly via remote data processing means, causes operation of an alarm when the sound emitted by the appliance departs from a sound profile concomitant with proper functioning of the appliance ('214, col. 10, line 17).

Regarding claim 14, and in view of the rejection of claim 13 above, West discloses a method according to claim 13, wherein the alarm is an audible alarm in the vicinity of the appliance ('214, col. 10, line 17).

Regarding claim 15, and in view of the rejection of claim 13 above, West discloses a method according to claim 13, wherein an alarm is actuated at a position remote from the appliance ('214, col. 10, line 17, alarm is inherently somewhat remote from flame to prevent damage from heat).

Regarding claim 16, and in view of the rejection of claim 1 above, West discloses a method according to claim 1, wherein the monitoring means is operable to cause shutting down of the appliance in the event of the acoustic signature of an operational event departing by a pre-determined amount from an acoustic signature concomitant with proper functioning of that operational event ('214, col. 10, line 1, sound causes reduction of flame during adjustment).

Regarding claim 19, and in view of the rejection of claim 1 above, West discloses a method according to claim 1, and providing to the monitoring means signals from transducers of a non-acoustic type ('214, col. 7, line 38).

Regarding claim 21, and in view of the rejection of claim 1 above, West discloses a diagnostic tool for an energy conversion appliance of a kind which, in normal use, performs two or more operational events in a pre-determined sequence and each said event having a different acoustic signature, said diagnostic tool being adapted for performing a method in accordance with claim 1 ('214, fig. 1, ref. 43).

Regarding claim 22, and in view of the rejection of claim 1 above, West discloses a diagnostic tool for an energy conversion appliance of a kind which involves a combustion process and which, in normal use, performs two or more operational events

in a pre-determined sequence and each said event having a different acoustic signature, one of said operational events comprising a fluid flow event which is related to the process of combustion and a second of said operational events comprising operation of a mechanical or electro-mechanical device ('214, fig. 1), said diagnostic tool comprising a sound receiving transducer coupled to output and monitoring means to identify, discriminate and log the acoustic signatures of said operational events within the operating sequence of the appliance ('214, fig. 1, ref 101, position near flame and would receive other sounds of burner), said monitoring means being operable to compare said received acoustic signatures with pre-established data ('214, col. 9, line 61).

Regarding claim 23, and in view of the rejection of claim 22 above, West discloses a diagnostic tool according to claim 22, wherein means is provided to transmit to remote data processing means signals related to the acoustic signatures of operating events within the operating sequence of the appliance ('214, col. 8, line 45).

Regarding claim 24, and in view of the rejection of claim 22 above, West discloses a diagnostic tool according to claim 22, wherein the energy conversion appliance comprises a protective enclosure within which said operational events occur, the or each sound receiving transducer being provided within said enclosure ('214, fig. 1, ref. 5, with 101 extending within the enclosure).

Regarding claim 26, and in view of the rejection of claim 22 above, West discloses a diagnostic tool according to claim 22, wherein said sound receiving transducer is receptive to an acoustic signature related to the process of combustion

and which comprises the flow of gas or liquid fuel to or through a combustion zone or flow of combustion products from the combustion zone ('214, col. 9, line 20).

Regarding claim 27, and in view of the rejection of claim 22 above, West discloses a diagnostic tool according to claim 22, wherein said sound receiving transducer is receptive to the acoustic signature associated with an operational event which comprises at least one of operation of a pump, operation of a relay, and flow of a liquid or gas through a pipe ('214, col. 10, line 1).

Regarding claim 28, and in view of the rejection of claim 22 above, West discloses a diagnostic tool according to claim 22, wherein the output or monitoring means has coupled thereto a transducer of a kind responsive to signals other than sound ('214, col. 7, line 38).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-3, 12, 17-18, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,120,214 to West et al in view of GB 2156520 to Carr-Brion.

Regarding claims 2-3, 12, 17-18, and 25, West discloses a method of monitoring an energy conversion appliance of a kind which involves a combustion process and

which, in normal use, performs two or more operational events in a pre-determined sequence, each said event having a different acoustic signature ('214, fig. 1, and col. 5, line 56), said method comprising providing a sound receiving transducer and positioning said transducer to receive sound signals emitted by the appliance during two or more operational events, one of said operational events comprising a fluid flow event which is related to the process of combustion and a second of said operational events comprising operation of a mechanical or electro-mechanical device ('214, fig. 1, ref 101, position near flame and would receive other sounds of burner), providing output means associated with said sound receiving transducer, said output means being responsive to the sound emitted by the appliance ('214, fig. 1, ref. 103), and employing a monitoring means to compare said received sound signals with pre-established data ('214, col. 9, line 61), and

West discloses a diagnostic tool for an energy conversion appliance of a kind which involves a combustion process and which, in normal use, performs two or more operational events in a pre-determined sequence and each said event having a different acoustic signature, one of said operational events comprising a fluid flow event which is related to the process of combustion and a second of said operational events comprising operation of a mechanical or electro-mechanical device ('214, fig. 1), said diagnostic tool comprising a sound receiving transducer coupled to output and monitoring means to identify, discriminate and log the acoustic signatures of said operational events within the operating sequence of the appliance ('214, fig. 1, ref 101, position near flame and would receive other sounds of burner), said monitoring means

being operable to compare said received acoustic signatures with pre-established data ('214, col. 9, line 61).

However, West does not detect the occurrences of positions of events in sequences.

The claims further recite detecting the positions of sounds in sequences with a plurality of different sensors ('520, page 1, line 67) and comparing with baseline data to detect faults in the position of sounds in a series of steps to determine correct operation ('520, page 2, line 70).

Thus, it would have been obvious to one of ordinary skill in the art to combine the invention of West with the sequence detection of Carr-Brion to provide protection of equipment and persons ('520, page 1, line 1).

Response to Arguments

Applicant's arguments filed 12-17-2007 have been fully considered but they are not persuasive.

Applicant states that in contrast to West, the claimed invention fails to result in control of the combustion process, other than to shut off, which is a control process. Applicant is reminded that the reference needs only anticipate the claimed subject matter.

Applicant further states that the sound receiving transducer of West would not receive sounds additional to the burner because figure 1 is not to scale; however, the sound transducer indicated as ref. 101 in figure 1 is directly in the airflow path through

the burner, and would therefore receive the sounds of the airflow because they are indicated as being in direct contact. Applicant further states that the system of West would not function properly if additional sounds were present; however, no evidence is presented to support this theory.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Cherry whose telephone number is (571) 272-2272. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SJC

/John E Barlow Jr./
Supervisory Patent Examiner, Art
Unit 2863